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BRAIN MODEL ON A LARGE SCALE.

BY DR. AUZOUX.

Translated by T. L. Bolton.

EXPLANATORY REMARKS.—An ordinal number preceded by the sign indicates that the piece upon which it is placed may be detached; the small numbers or letters of the alphabet indicate the details.

In this new edition of the human brain, the course of the nerve-fibres can be traced through all the parts of the encephalic mass. This preparation was constructed from dissections made on normal brains hardened in chromic acid according to the directions of Dr. Luys.1 . . . It enables one to see many details in the cerebrum, in the cerebellum, in the pons, in the medulla oblongata, and in the cephalic part of the spinal cord.

No. 1.

Left half of the callosum - great commissure, corpus callosum, callosum, corps calleux, der Balken.

The callosum, from which the cerebral mass is almost completely separated, represents a kind of box which forms the walls of the lateral ventricle.

The three kinds of nerve-fibres which enter into the composition of the cerebrum are represented in arbitrary colors of different shades. They are designated by the names: Afferent or sensory fibres, efferent or motor fibres, and commissural fibres; those which connect the two hemispheres.

1. Dorsal surface of the callosum.

2. Cephalic extremity of the collosum - the knee, genu corporis callosi, genu, genou die Balkenknie.

3. Reflected portion of the callosum—E—, rostrum corporis callosi,

rostrum, bec, der Schnabel.

4. Caudal extremity of the callosum corresponding to the splenium— E—, splenium corporis callosi, splenium, bourrelet, der Balkenwulst.

- 5, 5. Longitudinal tracts nerves of Lancisi mesal longitudinal striæ, striæ longitudinales mediales, W—, nerfs de Lancisi, G—.
- 6, 6, 6. Transverse tracts transverse striæ, L—, W—, tractus transvesaux, G-.
- 7 a, a, a. Afferent or sensory fibres [fibres convergentes supérieu res (Luys)].
 - 8 b, b, b. Commissural fibres [fibres commissurantes (Luys)]. 9 c, c, c. Efferent or motor fibres [cortico-striées (Luys)].

10. Portions of the corona of Reil-fibrous cone, corona radiata corona, couronne de Reil, der Stabkranz.

11. Ventral surface of the callosum.12. Sphenoidal boundary of the lateral ventricle (étui de l'hippocampe).

13. Posterior horns of the lateral ventricle - posterior horn, cornu

posterius, postcornu, cavité digitale, das Hinterhorn. 14. Unciform eminence, calcar avis, calcar, ergot de Morand, der

Vogelsporn. ci 15. Calcarine fissure, fissura calcarina, calcarine fissure, repli de la rconvolution de l'ergot, G-.

No. 2.

Left half of the fornix, -E-, fornix, fornix, voûte à trois piliers, die Gewoelbe.

¹Recherches sur le système nerveux cérébro-spinal,—sa structure, ses fonctions et ses maladies,—accompagné d'un atlas, par J. -J. Luys, Paris, 1865.

Upon this portion may be noticed the anterior pillar of the fornix, its continuation with the hippocampus major, the insertion of the afferent fibres of this region in the gyri of the hippocampus, the commissural fibres that arise in the cortical cells and unite to form the lyra, and how as fibres of the lyra, on reaching the anterior pillar they decussate to form the anterior commissure (Luys).

1. Anterior pillar, columna fornicis anterior, fornicolumna, pilier

antérieur, vorderer Gewoelbeschenkel.

2. Posterior pillar, columna fornicis posterior, W—, pilier postérieur, hinterer Gewoelbeschenkel.

3. A portion of the lyra—E—, lyra, lyra, lyre, die Leier.

- 4. E_{-} , hippocampus major, hippocampus, hippocampe ou corne d'Ammon; Ammonshorn.
- 5. E-, fimbria, fimbria, bandelette de l'hippocampe ou corps bordant, der Saum.
- 6. Hippocampal gyrus—E—, gyrus hippocampus, W—, circonvolution de l'hippocampe, G-

7. E-, uncus, uncus, crochet, der Haken.

8. The free border of this gyrus which is continued upon the callosum under the name of the nerve of Lancisi, is called dentate convolution,—fascia dentata, fasciola, corps godronné, gezähnte Leiste.

9. The cortical or gray matter-ectocinerea-composed of two layers

of cells.

- 10. The white or fibrous matter—alba (W).
 11. A transverse section of the hippocampus showing the windings of the medullary fibres and their insertion in the cortical cells.
- 12. Termination of the anterior commissure commissura anterior, præcommissura, commissure antérieure, vordere Commissur — in the cephalic portion of the sphenoidal lobe.

13. Posterior extremity of the callosum—the splenium of the au-

thors.

No. 3.

Superior portion of the left optic thalamus - thalamus opticus, thal-

amus, couche optique, der Sehhügel.

This section shows a portion of the three posterior centres of the thalamus, the fibres of the optic nerve passing from the geniculate bodies to the mesal centre.

1. The thalamus showing:

2. The mesal centre receiving the optic fibres - inner nucleus, nucleus cinereus internus, W-, centre moyen (Luys), innerer Kern.

3. The median centre receiving the fibres of the dorsal column of the spinal cord [centre médian (Luys).] (Considered by other authors as a portion of the lateral nucleus.)

4. Posterior centre — centre postérieur — receiving the auditory

fibres.

- 5. Plexiform disposition of the fibres that pass from the thalamus to enter into the formation of the corona.
- 6. The central tubular gray matter -L—, entocinerea, substance grise centrale, centrales Höhlengrau which covers over the thalamus.
- 7. Optic tract, tractus opticus, tractus opticus, bandelette optique, der Sehstreif.
- 8. External root passing to the external geniculate body—corpus geniculatum externum, geniculatum externum, corps genouillé externe, äusserer Kniehöcker.
- 9. Internal root passing to the internal geniculate body—corpus geniculatum internum, geniculatum internum, corps genouillé interne, innerer Kniehöcker.
 - 10. External geniculate body.
 - 11. Internal geniculate body.

12. Fibres passing from the geniculate bodies to the corpora quadrigemina—quadrigeminal bodies, corpora or tubercula quadrigemina, corpora quadrigemina, tubercules quadrijumeaux, die Vierhügel.

13. Optic fibres passing from the geniculate bodies to the mesal centre of the thalamus; the fibres are laid bare by the removal of the central tubular gray matter.

Upper portion of the intra-ventricular corpus striatum — caudate nucleus, nucleus caudatus, striatum caudatum, corps strié intra-ventriculaire, geschwänzter Kern.

Annular protuberance or Pons Varolii—tuber annulare, pons, pont de Varole, die Brücke-

Showing the decussation of the fibres of the middle peduncle of the cerebellum with the longitudinal fibres of the ventral peduncles of the cerebrum — a decussation which gives to this portion the appearance of

1. Fibres of the middle peduncle of the cerebellum—E—,crus ad portem, medipedunculus, pédoncle cérébelleux moyen, der Brückenschenkel.

 Decussation of these fibres in the median line.
 The decussation of these same fibres with the fasciculus of the ventral pyramids — pyramides anteriores, pyramides, pyramides antérieures, die Pyramiden.

4. The fibres of the pyramids.

5. Trigeminal nerve or fifth pair composed of two fasciculi—nervus trigeminus, W—, nerf trijumeau, die dreigetheilte Nerv.

6. Motor fasciculus of the same nerve.

7. Sensory fasciculus dividing into two branches.

8. A branch uniting in the formation of the fillet—lemniscus, lemniscus, fillet de Reil, die Schleife.

9. A branch passing towards the central gray matter of the axis. 10. Abducent nerve or sixth pair - nervus abducens, W-, nerf moteur oculaire externe, aüsserer Augenmuskelnerv.

Right half of the cerebellum - hind-brain, cerebellum, cerebellum, cervelet, das Kleinhirn.

1. Exterior surface of the cerebellum.

Median lobe or vermis of the cerebellum—the worm or vermiform process, lobus cerebelli medius, vermis, vermis du cervelet, der Worm.

3. Lateral lobe of the cerebellum.

4. Lobules or subdivisions of the cerebellar hemispheres.

5. Superior peduncle of the cerebellum-crus ad cerebrum, præpedunculus, pédoncle cerebelleux supérieur, der Bindearm.

Middle peduncle of the cerebellum.

- 7. Inferior peduncle of the cerebellum crus ad medullam, postpedunculus, pédoncle cérébélleux inférieur, der Medullarschenkel.
- 8. Valve of Vieussens, velum medulare anterius, valvula, valvule de Vieussens, vorderes Marksegel.
- 9. Disposition of the fibres of the cerebellum E-, arbor vitæ, arbor, arbre de vie, der Lebensbaum.

The folds of the cortical matter forming the folia.

Section through the lateral lobe.

- Rhomboidal or dentate body, corpus dentatum, dentatum, corps dentalé, G-
 - 13. The fibrous portion.

14. Cellular portion.

15. Divergence of the white fibres.

16. Nuclei of the gray matter lying among the foregoing fibres. [Luys]

17. Section of the cortical gray matter.

18. E-, uvula, cerebelli uvula, luette, die Zapfe.

Valve of Tarini, or posterior medullary velum, velum medulare posterius, metatela, valvule de Tarin, hintere Hirnklappe.

20. Lobule of the pneumo-gastric-E-, lobulus appendicularis, flocculus, lobules du cervelet, die Flocke.

Lemniscus or ribbon of Reil and the left half of the corpora quadrigemina.

The fibres which compose the lemniscus have three distinct origins, and after having decussated on the median line, come to lie dorsad of the Iter, and are distributed to the posterior and median centres of the thalamus. The dorsal fibres of this tract decussate and form the posterior commissure [Luys].

1. Anterior tubercle, corpus quadrigeminum anterius, prægeminum, tubercule supérieur, obere Zweihügel.

2. Posterior tubercles, corpus quadrigeminum posterius, postgeminum, tubercule inférieur, untere Zweihügel.

3. Central tubular gray matter covering the fourth ventricle.

4. Fasciculus formed by the trigeminal nerve (Luys).

- 5. Fasciculus formed by the auditory nerve—nervus auditorius, W.—. nerf acoustique, der Hörnerv.
- 6. Fasciculus formed by the spinal cord medulla spinalis, myelon, moelle épinière, das Rückemmark.
- 8. Portion of the aquæduct Sylvii, aquæductus, l'aqueduc de Sylvius, die Wasserleitung.

9. Portion of the valve of the Vieussens.

7. Decussating fibres.

10. Trochlear nerve or fourth pair - nervus trochlearis, W.-, nerf pathétique, der Rollmuskelnerv.

Left ventral column of the spinal cord, ventral peduncles of the cere-

brum (the ventral pyramids of the authors.)

This portion is designed to show how all the efferent fibres (corticostriees-Luys) traverse the extra-ventricular portion of the corpus striatum, thus forming the three arches 3, 4, 5; and how, after having formed the three arches, the cortical striæ form the three cones which constitute the ventral peduncles of the cerebrum, that is, the motor tracts.

1. Extra-ventricular nucleus of the corpus striatum cut vertically lenticular nucleus, necleus lenticularis, lenticula, noyau extra-ventricu-

laire du corps strié, der Linsenkern.

- 2. The termination of the fibres of the superior peduncle of the cerebellum in the three arches of the corpus striatum. (Luys.)
 - 3. Internal arch.
 - 4. Middle arch.
 - 5. External arch.
 - Locus niger of Vicq-d'Azyr. (Substantia nigra of the authors.)

Tuber cinereum, torus, corps cendré, G.—

- 8. Infundibulum, infundibulum, infundibulum, tige pituitaire, der Trichter.
 - Corps cendré=tuber cinereum.

10. Optic tract.

- 11. Optic commissure—chiasma, chiasma nervorum opticorum, chiasma, chiasma des nerfs optiques, die Sehnervenkreuzung.
 - 12. (Omitted.)
 - 13. Olfactory tract, tractus olfactorius, W-, nerf olfactif, G.-

Mesal root. (Luys.) Median root. (Luys.) 15.

Median root of the right side passing to the olfactory ganglion of the left side. (Luys.)

17. The fibres that bind the olfactory ganglion to the central gray matter. (Luys.)

18. Lateral root, stria externa, W—, racine externe, laterale Wurzel.

19. Olfactory ganglion. [Luys]20. Portion of the tænia semi-circularis or stria cornea, tænia, lame cornée, der Grenzstreif.

21. Anterior commissure—commissura anterior, præcommissura, commissure antérieur, vordere commissur-exposed by the removal of a portion of the corpus striatum.

22. Oculo-motor nerve, or third pair, nervus oculomotorius, W.,

nerf moteur oculaire commun, der Augenmuskelnerv.

23. Trochlear nerve or fourth pair.

- 24.Anterior peduncles of the cerebrum formed by the three cones.
- 25. (Omitted.) 26. (Omitted.)

27. (Omitted.)

The fibres of the middle peduncles of the cerebellum intercross-28. ing with the fibres of the cerebral peduncles.

29. The fibres forming the sensory root of the trigeminal nerve, or

the fifth pair.

30. The fibres forming the motor root of the fifth pair.

The fibres forming the root of the abducent nerve or sixth pair.

32. After-brain—medulla oblongata, oblongata, bulbe, das verlängerte Mark—upon which may be distinguished:

33. Anterior pyramids, corpus seu eminentia pyramidalis, pyramis ventralis, pyramide antérieure, G—;

34. Left olivary body—oliva, oliva, olive, die Olive—cut to show the arrangement of the arcuate fibres—fibræ arciformes, W—, fibres arciformes, die Bogenfasern.

35. Arcuate fibres derived from the inferior peduncles (Luys) of the

cerebullum decussating in the middle line.

36, The hypoglossal nerve or twelfth pair—nervus hypoglossus, W—, nerf grand hypoglosse, der Zungenfleischnerv.

37. Ventral column of the spinal cord.

No. 9.

Dorsal peduncle of the cerebrum—tegmentum, tegmentum, étage supérieur du pedoncle, das Haubenfeld.

This portion is designed to show how the nerves which transmit to the cerebrum the sensations from all parts of the body are focused in the four centres of the thalamus, and how the fibres of the thalamus, changing their direction, pass below the tænia semi-circularis to unite in forming the corona.

Portion of the corpus striatum—nucleus caudatus.

2. Portion of the corpus striatum—nucleus lenticularis.

The thalamus cut transversely.

Cephalic or olfactory centre—tuberculum anterius, W—, centre antérieur, die vorderer Kern-of the thalamus.

Mesal or optic centre.

Median or inferior centre.

7, Posterior or acoustic centre—tuberculum posterius, pulvinar, centre. postérieur, der Polster.

8. Posterior commissure, commissura posterior, postcommissura, commissure postérieure, hinterer Commissur.

9. Gray or soft commissure of the thalamus-middle commissure. commissura mollis, medicommissura, commissure grise, G-.

- 10. Mammillary bodies, corpora mammillaria, albicans, éminence mammillaire, die Markkügelchen.
 - 11. Foramen of Monro, foramen Monroi, porta, trou de Monro, G-.

12. Anterior pillar of the fornix.
13. Anterior fibres of this pillar proceeding to the gray matter of the septum lucidum—hemi-septum, F—, die Scheidewand—and to the corpus striatum.

14. Posterior fibres forming the peduncle of the pineal gland—

pedunculus cornarii, habena, pedoncle de la glande pinéale, G.

15. The fibres of this peduncle communicating with the anterior centre of the thalamus.

Descending fibres proceeding to the corpora mammillaria.

Bundle of Vicq-d'Azyr—radix descendens fornicis, W—, fascicule de Vicq-d'Azyr G—, proceeding from the anterior or olfactory centre to the corpora mammillaria.

Tænia semicircularis.

19. Superior olivary body or the corpus of Stilling-tegmental nucleus, nucleus tegmenti (erroneously called olive supérieure by Luys), der rothe Kern.

20. The depression in this body designated as the hilum.

21. Left superior peduncle of the cerebellum.

22.The fibres of this peduncle decussating in the middle line.

23. Inferior peduncle of the cerebellum.24. The fibres of this peduncle intermingling with those of the dorsal column of the spinal cord.

25. The dorsal column-columna posterior, W-, cordon postérieur.

 G—, —of the spinal cord.
 Restiform body, 1—corpus restiforme, restis, corps restiforme, das strangförmige Körper.

27. Posterior pyramid, 2 clava funiculi gracilis, clava, pyramide postérieure, G-

28. Floor of the fourth ventricle.

Calamus scriptorius continuous with the central canal of the spinal cord.

30. Iter.

31. Gray matter of the axis passing across which the ascending fibres of the posterior peduncle of the cerebellum may be seen.

Dorsal column of the spinal cord.

- Entrance of these fibres in the median centre of the thalamus.
- [Luys.]
 34. Plexiform arrangement of the fibres leaving the centres of the
 - Their course below the tænia semicircularis.
 - 36. These fibres ascending to form the corona.

37. Corona.

- 38. The root of the oculo-motor nerve or the third pair.
- 39. The root of the trochlearis or fourth pair. 40. Origin of the trigeminal nerve or fifth pair.

41. The motor root of the trigeminal nerve.

- The root of the abducent nerve or sixth pair. 42. 43. The facial nerve or seventh pair,—nervus facialis, W—, nerf facial, der Gesichtsnerv.
- 44. Nerve of Wrisberg, nervus intermedius, W-, nerf de Wrisberg,
 - 45. Acoustic nerve or eighth pair.

¹ The number and designation should include the more lateral portions of the dorsal

² The designating number 27 is placed upon the funiculus cuneatus instead of upon the funiculus gracilis, where it should stand.

- The ganglionic enlargement of this nerve-tuberculum acusticum.
- 47. Root of this nerve losing itself in the central gray matter of the fourth ventricle (striæ medullares or striæ acusticæ of the authors.)
- 48. The fasciculus of the acoustic nerve contributing to the formation of the leminiscus.
- 49. The glosso-pharyngeal nerve or ninth pair—nervus glosso-pharyngeus, W-, nerf glosso-pharyngien, der Zungenschlundkopfnerv.
- 50. The pneumogastric nerve or tenth pair—vagus nerve, nervus vagus, nerf pneumogastric, der Herumschweifendenerv.
 - The spinal accessory nerf or eleventh pair—nervus accessorius,
- W—, nerf spinal G—.
- 52. The tubercle of Rolando-tuberculum cinereum Rolandi, W-, substance gelatineuse de Rolando, G—.
 - The ventral horn of the gray matter of the spinal cord.
 - The dorsal horn of the gray matter of the spinal cord.
 - 55. The ventral or motor root of the spinal accessory nerve.
 - 56. The dorsal or sensory root of the spinal accessory nerve.
 - 57.The root of the hypoglossal nerve or twelfth pair.
 - **58.** First pair of cervical nerves.
 - 59. The ventral or motor root of this nerve.
 - 60. The dorsal or sensory root of this nerve.
- Accessory nerve [Vaso-motor root of the great sympathetic nerve. Luys].
 - 62. Spinal ganglion.

No. 10.

Part of the cortical gray matter of the right hemisphere, on which the gyri and sulci are seen.

- Fissure of Sylvius.
 Fissure of Rolando—central fissure, fissura centralis, central fissure, scissure de Rolando, G-
 - 3. The gyri of the island of Reil-insula.
 - The external cortical layer composed of small cells.
 - Internal cortical layer composed of large cells.

No. 11.

Right cerebral hemisphere.

This portion is designed to show in their totality all the parts of the cerebrum and to give an idea of their functions.

- 2, 3. First, second and third frontal gyri.
 The fissure of Rolando.
- 5, 5, 5, 5. Superior or parietal gyri.
- 6, 6, 6. Posterior or occipital gyri. 7, 7. The fissure of Sylvius.

- 8. Temporo-sphenoidal lobe.
 9. The gyri of the island.
 10, 10, 10. The gyri of the mesal surface of the hemisphere.
- 11. Gyrus fornicatus.
- Hippocampal gyrus. 12.
- 13. Fascia dentata.
- 14. The uncus.
- 15. The callosum.
- The splenium of the callosum, 16.
- The genu of the callosum. 17.
- The rostrum of the callosum. 18.
- Longitudinal tract—the nerves of Lancisi. 19.
- 20. The fornix.
- The anterior pillar. 21.
- The septum lucidum composed of two laminæ of which one has been in part removed.

- 23. The lyra.
- 24. The thalamus on which four centres are seen.
- 25.The anterior or olfactory centre.
- The mesal or optic centre. 26.
- 27. The posterior or acoustic centre.
- 28. The median or inferior centre.
- The pineal gland, glandula pinealis, conarium, glande pinéale, die 29. Zirbeldrüse.
- The peduncles (habenulæ of the authors.) of the pineal gland separated into two fascicuil.

Fasciculus going to the anterior centre of the thalamus. Fasciculus going to the anterior pillar of the fornix. (Luys.) Corpus mammillare. 32.

33.

- Bundle of Vicq-d'Azyr passing from the anterior centre of the 34. thalamus to the corpus mammillare.
 - The third ventricle. 35.
 - 36. The foramen of Monro.
 - The aqueduct of Sylvius. 37.
 - 38. Anterior commissure.
- 39. The termination of the anterior commissure in the temporosphenoidal lobe.
 - The gray or soft commissure.
- 41. The posterior commissure composed of three distinct fasciculi intercrossing with those from the opposite side.
 - 42. The tuber cinereum.
 - 43. Infundibulum.
 - 44. Anterior portion of the lateral ventricle.
 - 45. Corpus striatum-nucleus caudatus.
- 46. Corpus striatum—nucleus lenticularis—separated from the preceding to show the insertion of the cortico-striæ.
- 47, 47. The termination of the superior peduncles of the cerebellum in the arches of the corpus striatum. [Luys.]
 - The temporo-sphenoidal portion of the lateral ventricles.
 - The hippocampus or Ammonshorn. 49.
 - 50. The fimbria.
 - 51. The fascia dentata.
 - The occipital portion of the lateral ventricles, or the digital cavity. **52.**
 - 53. The hippocampus minor. 54.
 - The corpora quadrigemina. The corpus prægeminum. 55.
 - The corpus postgeminum. 56.
- 57. The great transverse fissure (fente de Bichat)—the space included between the splenium of the callosum, the corpora quadrigemina, and the gyri fornicati. Within this space are to be seen:
 - 58. The geniculate bodies;
 - The fasciculi joining these bodies with the corpora quadrigemina; 59.
 - The floor of the fourth ventricle. 60.
 - The calamus scriptorius. 61.
 - 62. (Omitted.)
 - The superior peduncle of the cerebellum. 63.
 - 64. The decussation of this peduncle with that of the opposite side.
 - 65.The tegmental nucleus.
 - The inferior peduncles of the cerebellum. 66.
 - Tubercle of Rolando. 67.
 - The restiform bodies. 68.
- 69. The column of Goll-funiculus gracilis, W-, funicule grêle, die zarte Stränge.
 - The nucleus of the funiculus gracilis—clava.
- 71. The olfactory bulb bulbus olfactorius, rhinobulbus, bulbe olfactif, der Riechkolben.

- 72. The olfactory tract.
- 73. The mesal root of this tract.
- 74. The middle or gray root.
- 75. The external root going to the ganglion.
- **76.** The olfactory ganglion. 77. The mesal or gray root of the left olfactory tract proceeding to the olfactory ganglion of the right side.
- The fibres binding the olfactory ganglion to the central gray matter.
 - 79. Tænia semicircularis.
 - The optic nerve. 80.
 - 81. The chiasma.
- The fasciculus of gray fibres connecting the chiasma of the optic nerves with the tuber cinereum. (Erased in original.)
 - The tract of the optic nerve dividing into two fasciculi.
- 84. The fasciculus passing to the internal geniculate body.

 85. The fasciculus passing to the external geniculate body.

 86. Perforated space—anterior perforated space, locus perforatus anticus, præcribrum, quadrilatère perforé, G—,—limited posteriorly by the optic fibres, laterally by the fascia dentata, and anteriorly by the roots of the olfactory nerves.
- 87, 87, 87. The anterior cerebral peduncles, on which are seen the three layers coming from the lenticular nucleus.
 - The root of the common oculo-motor nerve or third pair.
 - 89. The trochlear nerve or fourth pair.
 - 90. The sensory root of the trigeminal nerve or the fifth pair.
 - 91. The motor root of the same nerve.
 - 92. The root of the abducent nerve or the sixth pair.
 - 93. The root of the facial nerve or the seventh pair.
 - 94. Acoustic nerve or eighth pair.
 - Tuberculum acusticum. 95.
 - 96. Lemniscus formed of three roots.
 - 97. Fasciculus of the acoustic nerve [Luys.]
 - Fasciculus coming from the trigeminal nerve (Luys).
 - Fasciculus coming from the spinal cord.
- 100. Decussation of the lemniscus forming the superior wall of the iter.
 - 101. Part of the velum medullare anterius.
 - The nerve of Wrisberg. 102.
 - 103. The glossopharyngeal nerve or the ninth pair.
 - 104. The pneumogastric nerve or the tenth pair.
 - The spinal accessory nerve or the eleventh pair. 105.
 - 106. The ventral or motor root of the spinal accessory nerve.
 - The dorsal or sensory root of the same nerve. [Luys]. The root of the hypoglossal nerve or the twelfth pair. The first pair of cervical nerves. 107.
 - 108.
 - 109.
 - The ventral or motor root of the same pair. 110.
 - The dorsal or sensory root of the same nerve. 111.
 - Spinal ganglion of this same nerve. 112.
 - Vaso-motor fibres of sympathetic nerve. [Luys]. 113.
- 114. Second pair of cervical nerves showing the same character and details as the first pair.
 - Spinal cord. 115.
 - The ventral longitudinal fissure. 116.
 - 117. The dorsal longitudinal fissure.
 - 118. The ventral, anterior or motor column.
 - The dorsal, posterior or sensory column. 119.
 - 120. Lateral column.

121. Gelatinous substance of Rolando in the centre of which is seen the central canal of the spinal cord.

122. The central canal.

- 123. The ventral horns of the spinal cord in connection with the efferent or motor fibres.
- 124. The dorsal horns in connection with the afferent or sensory fibres.

125. The central gray matter of the spinal cord.

126. Claustrum, claustrum, avant-mur, vormauer — lying between

the lenticulate nucleus and the gyri of the island.

- 127. Antero-posterior fasciculus composed of afferent fibres, a, a, a, and of efferent fibres, c, c, c, which form the connection between the anterior gyri of the cerebral lobes and the most distant part of the corpus striatum and the thalamus, and which form a kind of enclosure in which the claustrum lies (connections those of Luys).
 - 128. Inter-cortical commissural fibres association fibres of Meynert.
- 129. Ventral column of the spinal cord separating from that of the opposite side to allow the lateral columns to decussate.

130. The decussation of the pyramids.

131. The decussation of the dorsal columns.

132. The ventral pyramids.

133. Substantia nigra lying between the two fasciculi which form the anterior pyramids.

134. The ventral layer of the cerebral peduncle — crusta, crusta, F—,

Hirnschenkelfuss.

135. The superior layer of the cerebral peduncle formed by the dorsal and ventral columns of the spinal cord.

A LABORATORY COURSE IN PHYSIOLOGICAL PSYCHOLOGY.

BY EDMUND C. SANFORD, PH. D.

After Prof. Ladd's careful statement of the psycho-physiological facts and Prof. James's brilliant exposition of their psychological and even metaphysical import, it is no longer necessary to argue the importance of the subject matter of this branch of the new psychology. No one that has once seen the new is going to be satisfied any longer with the old. But the appropriation of new facts alone is not sufficient to elevate psychology to its true place in the circle of sciences. As long as psychologists live upon the crumbs that fall from the tables of neurology and physiology they will live in dependence. They must investigate for themselves,—no less rigorously and no less broad-mindedly than others, but from their own standpoint, and must view what they find in its psychological perspective. This means that a prominent place must be given to psychological laboratories for research; and the friends of psychology already congratulate themselves on the beginning of several of great promise in this country.

Beyond this, however, lies another thing of cardinal importance, namely, the adoption of a right pedagogical method. The student of psychology must have its facts and principles brought home to him in a way not inferior to the best in other sciences, if psychology is to have the infusion of new vigor that they have had, and afford the healthy and virile training that they afford. He must see for himself the phenomena about which he psychologizes, he must perform the experiments, he must have the inside view. The new psychology has been said to do away with introspection, but that is a mistake. It retains in-